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ABSTRACT

The formative classroom assessment using cooperative groups described in this paper has four purposes: (1) to increase students' understanding of concepts through verbal interaction with peers; (2) to provide feedback to the instructor on the cognitive processes students use to answer questions; (3) to reinforce the classroom learning environment; and (4) to model a variety of assessment methods. The assessment is based on the work of L. Vygotsky, among others. Students are randomly assigned to groups of four or five just before the test materials are distributed. Each student receives a test booklet and a scantron sheet for his or her answers, to be marked after discussion with the group. Group consensus is neither required nor encouraged. Student reaction to this assessment format has been uniformly positive. (Contains 17 references.) (Author/SLD)

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Running head: FORMATIVE CLASSROOM ASSESSMENT

Formative Classroom Assessment Using Cooperative Groups: Vygotsky and Random Assignment

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Abstract

The formative classroom assessment using cooperative groups described in this paper has four purposes: (1) to increase students' understanding of concepts through verbal interaction with peers, (2) to provide feedback to the instructor on the cognitive processes students use to answer questions, (3) to reinforce the classroom learning environment, and (4) to model a variety of assessment methods. Students are randomly assigned to groups of four or five just before the test materials are distributed. Each student receives a test booklet and a scantron sheet for his or her answers--to be marked after discussion with the group. Group consensus is neither required nor encouraged. Student reaction to this assessment format has been uniformly positive

Formative Classroom Assessment Using Cooperative Groups: Vygotsky and Random Assignment

Traditionally, the major function of classroom assessment in undergraduate and graduate university courses has been to measure the individual student's learning in order to provide feedback to the student and to spread student scores to assign grades (Sax, 1997). Designing assessments to spread student scores permits the use of the normal curve to assign grades. "Grading on the curve" guarantees competition among students and often ensures a competitive tone to the classroom. Traditional norm-referenced grading is also based on the assumption that the grades of students in upper-level and graduate classes can be expected to range from "A" through "F." Recently, more and more university professors have questioned this assumption as they consider contract grading and mastery learning (Linn & Gronlund, 2000; Sax, 1997).

There are additional purposes for classroom assessment in higher education. Formative assessment (often the "midterm") is used to provide feedback to the students and instructors; summative assessment (the "final") is used to determine whether the student will pass or fail the course. The formative classroom assessment using cooperative groups described in this paper has four additional purposes:

1. To increase students' understanding of concepts through verbal interaction with peers (Bandura, 1986; Johnson & Johnson, 1994; Schrunk, 1987; Vygotsky, 1978);
2. To provide feedback to the instructor on the cognitive processes students use to answer questions (Webb, Nemer, Chizhik, & Surgrue, 1975).
3. To reinforce the classroom learning environment (Brookhart, 2000; Griffin, 1994; Klecker, 2000).

4. To model a variety of assessment methods (Brosnan & Hartog, 1993; Linn & Gronlund, 2000; Sax, 1997).

The formative classroom assessment using cooperative groups was designed to measure how well the individual student responds to an assessment question after he or she has had an opportunity to discuss the answers with peers. This alternative context for assessment is grounded in the theory that students learn better by collaborating and discussing concepts with peers than by constructing answers in isolation (e.g., Vygotsky, 1978).

Cooperative assessment grew from cooperative learning and assumptions about the teaching and learning process in higher education. These assumptions have long roots in American education. Dewey (1910) criticized the use of competition in education and advocated that schools be structured as democratic learning communities. Boe (1994) suggested that cooperative group work in classrooms should be followed by cooperative group assessment because it "implements the ideals of democracy in the classroom" (p. 5).

Additional assumptions underlying democratic learning were outlined--then illuminated--by Smith & MacGregor (1998) in their description of cooperative learning in higher education:

1. *Learning is an active, constructive process*. To learn new information, ideas, or skills, students have to work actively with them in purposeful ways. . .
2. *Learning depends on rich contexts*. . . .Instead of being distant observers of questions and answers, or problems and solutions, students become immediate practitioners. . .
3. *Learners are diverse*. Students bring multiple perspectives to the classroom--diverse backgrounds, learning styles, experiences,

and aspirations; teachers can no longer assume a one-size-fits-all approach. . .

4. *Learning is inherently social.* In collaborative learning, there is the social stimulation of mutual engagement in a common endeavor. This mutual exploration, meaning-making, and feedback often leads to better understanding on the part of students, and to the creation of new understanding as well.

5. *Learning has affective and subjective dimensions.* . . In collaborative learning situations, students generally experience a shift in their intellectual development as they learn to articulate their own point of view and listen to the views of others. . . (p. 586)

Procedure for Cooperative Group Assessment The cooperative group assessment described in this paper has been used in both upper-level undergraduate and graduate classes. The process is used for the first exam in the class, usually a few weeks before the midterm exam.

The exams used for this procedure typically consist of 50 multiple-choice items measuring knowledge, understanding, and application of concepts. This test is somewhat shorter than other multiple-choice exams used in the course because the assessment procedure--which includes group discussion--takes slightly more time. Each student is encouraged to prepare in advance an 8-1/2" x 11" sheet of notes on the content to be assessed (e.g., notes on textbook chapters and lecture material). The students may share this information as they discuss items

during the test. The purpose of preparing this sheet is to ensure that each student has processed the material and has selected the main concepts from the content domain.

Prior to the day of the test, the instructor uses the class roster and a table of random numbers to randomly assign (Gay & Airasian, 1999) students to groups of four or five. It is important that the students do not know their group assignments until the day of the assessment, just before the test materials are distributed. Otherwise, the assessment would resemble the Jigsaw (Slavin, 1995) technique, that is, students would divide the content and each would become an "expert" on a specific content.

After the students have been assigned to groups, each student receives a test booklet and a scantron sheet for his or her answers--to be marked after discussion with the group. Students are told that they may choose to disagree with the group members and mark the answer that they feel is correct. Group consensus is neither required nor encouraged. The individual's scores are recorded. Often, students within groups have different scores.

Summary

All university classes include various forms of classroom assessment for many purposes. Term papers are assigned (hopefully with grading rubrics included with the assignment) to measure the student's ability to research, format, write, analyze, synthesize, and evaluate. Portfolios are used to develop the student's ability to create and evaluate material. One-shot questions are used at the beginning of class to evaluate the quality of the student's reading of assignments (maybe this is just another accountability test?). Performance assessment (with scoring rubrics) can best assess a clarinet solo, a collage in the cubist style, or micro-teaching.

The formative collaborative group assessment described in this paper is a very useful additional assessment tool. Student reaction to this format has been uniformly positive (Griffin,

1994; Klecker, 2000; Webb, 1997). As an instructor, it has been informative to study student interaction and reasoning strategies within peer groups. From a measurement perspective, listening to students "think aloud" (Whittington, 2000) and discuss their reasons for choosing an answer to the each item provides insight into how the items are functioning.

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